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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 207 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/KR 2003/002571 | International filing date (day/month/year) 26 November 2003 (26.11.2003) | Priority Date (day/month/year) 14 July 2003 (14.07.2003) |
| International Patent Classification (IPC) or national classification and IPC IPC⁷: H01M 8/02 | | |
| Applicant SOGANG UNIVERSITY | | |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examination Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I. <input checked="" type="checkbox"/> Basis of the opinion II. <input type="checkbox"/> Priority III. <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV. <input type="checkbox"/> Lack of unity of invention V. <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI. <input type="checkbox"/> Certain documents cited VII. <input type="checkbox"/> Certain defects in the international application VIII. <input type="checkbox"/> Certain observations on the international application | | |
| Date of submission of the demand <div style="text-align: center;">05.02.2005</div> | Date of completion of this report <div style="text-align: center;">6 October 2005 (06.10.2005)</div> | |
| Name and mailing address of the IPEA/AT Austrian Patent Office Dresdner Straße 87 A-1200 Vienna Facsimile No. 1/53424/200 | Authorized officer <div style="text-align: center;">STEPANOVSKY M.</div> Telephone No. 1/53424/ | |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR 2003/002571

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed

☐ the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement) under Article 19

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the drawings:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as „originally filed“ and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/KR 2003/002571

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

| | | | |
|-------------------------------|--------|------|-----|
| I. Statement | | | |
| Novelty (N) | Claims | 1-10 | YES |
| | Claims | ---- | NO |
| Inventive step (IS) | Claims | 1-10 | YES |
| | Claims | ---- | NO |
| Industrial applicability (IA) | Claims | 1-10 | YES |
| | Claims | ---- | NO |

Citations and explanations (Rule 70.7)

This examination was made on basis of the search report published together with WO2005/006474 A1, dated 19.03.2004. In this search report the second document was cited wrong and the examination was made for the US 5580681 A instead:

Novelty:

US 5512391 A shows a solid state electrochemical cell containing a proton-donating aromatic compound. US 5580681 A shows a solid state electrochemical cell with a proton donating membrane. US 2003/0012996 A1 shows a fuel cell with an ion conductor or an oxidic solid proton conductor. There could not be found a proton-conducting polymer membrane wherein 1 to 40 parts per weight of ionomer/solid proton conductor is dispersed in 100 parts per weight of proton conducting polymer having proton-exchanging groups in the side chain. So the subject-matters of the present application are new, since they are not totally described in the cited literature.

Inventive step:

The resulting advantageous effects of the proton-conducting polymer membrane wherein 1 to 40 parts per weight of ionomer/solid proton conductor is dispersed in 100 parts per weight of proton conducting polymer having proton-exchanging groups in the side chain, as claimed could not be foreseen, therefore the subject matters claimed meet the requirements of inventiveness.

Industrial applicability:

The industrial applicability of the proton exchange membrane, of the present application is self-evident.